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THE ULTIMATE ATTRIBUTES OF REALITY[1]

THE problem of substance and attributes is somewhat out of fashion since the dominance of modern idealism. It has become a habit to think of reality simply in terms of experience, and reflective experience at that. It seems to me, however, that with our new epistemological tools we are in a position to take up seriously some of the metaphysical problems. Pragmatism, as a movement, has been disappointing in this respect. This is due to the fact that the pragmatic method has been lost in the subjectivism of its advocates.

Substance has come to have a distinct scientific meaning in modern times. So far as it is profitable to revive the Spinozistic conception of substance, it would now amount to an epistemological postulate that facts are part of one world in such a way that every fact can, under certain conditions, make a difference to other facts. What those conditions are, it is for science to investigate. The differences must also be capable of becoming differences to a reflective consciousness under certain conditions, in order to concern us.

These differences are capable of being systematized into certain attributes or categories or dimensions, according to your predilection for terms. My reflections have led me to believe that there are four such attributes irreducible to terms of each other, *viz.*, stuff, time, space and direction. Future investigation will have to determine how far these are ultimate attributes and whether there are others.

The method which we shall pursue will be that of scientific induction instead of *a priori* deduction. No category must be assumed which is not necessitated by the adjustments within experience. In the nature of things, to fill out a complete scheme of categories would be to furnish a complete science of the universe. This, of course, is out of the question. All we can hope to do is to ascertain the fundamental attitudes necessitated by reality.

The classical discussion of substance and attributes goes back to

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[1] Read before the Western Philosophical Association in Chicago, March 30, 1907.

Spinoza. Spinoza makes causal difference, as well as conceptual, depend upon the possession of a common attribute on the part of the facts. This, evidently, is a confusion of causal processes with logical classification. But the conception of action of like upon like is still prominent in our conception of causality, and still hampers us in trying to deal with the complexity of reality and its various grades.

The same reality, according to Spinoza, figures in different worlds. Thus substance may figure as both thought and extension. It must also figure in infinite other ways not included in experience. Thus substance must possess not only all the attributes there is evidence of, but infinite others. This is the medieval dogma of the *ens realissimum* of which we still find evidence in the idealist's conception of infinite variety in which his absolute must revel.

It is not necessary to point out that Spinoza is inconsistent with his own thesis, that everything within reality must be conceived with reference to a context, or, as he would put it, must have a common attribute with the rest of reality. He is inconsistent, first, as regards the relation between thought and extension, for extension must be conceived, and so must be capable of making a difference to thought. To be indifferent to thought would be to be without significance. He is still more inconsistent as regards his infinite attributes. These, by hypothesis, make no difference to thought, and yet are assumed. On the contrary, in so far as we make an *a priori* assumption, we must start with a finite number of attributes. Else knowledge becomes impossible. As a matter of fact, there can be only as many attributes as make a difference to judging or reflective experience. The question whether these are altered by being known can have no meaning, since it is only for reflective experience that there are attributes.

It is unnecessary to point out that the attribute of extension of Spinoza can not be made an independent attribute apart from experience. Extension is as much a subjective quality as is color or tone. This has been pointed out sufficiently by both empiricists and rationalists since Spinoza. That leaves us only one attribute, namely, thought or experience, of all Spinoza's attributes; and, on the whole, modern philosophy has attempted to express reality in terms of this. Space and time, since Kant, have been regarded as subjective or phenomenal. Absolute idealism, moreover, has found no difficulty in getting rid of the dualism of the *is* and the *ought* by reducing the latter to terms of the former. These are costly sacrifices in the service of simplicity. Can we reconstruct our universe thus? I believe not.

Modern science, in so far as it has been allowed to pursue its own task, unhampered by metaphysical suppositions, whether of the materialistic or idealistic sort, has always insisted upon as many attributes or dimensions as the facts seem to require. These seem to be three for natural science: space, time and energy. The conception of energy has gradually supplanted the conception of mass as a universal unit of description. Mass is applicable only within a limited field. It is not applicable, for example, to electricity; while energy in its transformations can be made to cover the whole extent of process.

In spite of the fact that natural science has found it necessary to work with these three attributes, it has failed to define its dimensions in any clear way. The attempt at simplification has always made itself felt. Thus space and time have been regarded as pure quantity. But if space and time are pure quantity, how can they be given definite meaning? We must look for the differentia of these attributes. Not the serial tools, which they have in common, but their specific character, is what we must try to get at.

Not only has the attempt been made to reduce time and space to pure quantity, but the same attempt has been made in regard to mass. Thus Karl Pearson would reduce mass to acceleration. But if mass or energy is pure quantity, how can we get the different units with which quantity must deal? Quantity, obviously, means something different, whether it is concerned with chemical elements or electric potentials or neural reactions. But this only shows the confusion that has been too prevalent in the analysis of scientific concepts.

Moreover, natural science has neglected one attribute which is fundamental for its whole procedure. It has assumed at the outset that the universe has meaning. This is not deducible from the three dimensions with which natural science expressly deals. It does not follow from the mere conception of energy, nor does it follow from the conception of time or of space. We may find, therefore, that there is another dimension, neglected, because presupposed, by natural science.

It must be obvious now what we are about. While this inquiry did not start from the assumptions of science, it must be a matter of more than curious coincidence that the metaphysical needs and the scientific needs seem to correspond. Applying the pragmatic criterion, that we must assume only such realities as can make a real difference to our reflective experience, I have arrived at the conclusion that reality can not be expressed in less than four dimensions. These dimensions I now proceed to define:

The first that I shall deal with is that of being or stuff. The stuff that has been emphasized by modern idealism is meaning stuff, our reflective purposes. These are of final importance for understanding the world. They enable us to differentiate the processes and spread them out in series. Similarity, difference, causality, reciprocity, etc., as general categories or modes of functioning on the part of the reflective ego, must be regarded as stuff also. This reflective stuff is partly content stuff, partly tendency stuff, which makes the particular content significant. I want to point out, however, that in order to make a difference to reflective experience reality need not necessarily be reflective.

On the contrary, reflective experience will be seen to be dependent upon non-reflective processes. The meaning of the object reflected upon depends largely upon its unnoticed background. There are three ways in which attention may be dependent upon unnoticed facts. Thus, processes not attended to may be the larger associative context, the background of feeling and tendency, of the object. The different meaning of man or evolution to the scientist and to the common man is largely in the 'fringe.' Or the unnoticed may be instrumental to the activity of attention without itself being attended to. For example, the words on the page that we read. We have a very different consciousness when we are attending to the meaning of the words from what we have when we make the words themselves the objects of attention. There may be processes, however, which are entirely irrelevant to the purposive consciousness of the moment, as well as unnoticed by it. Thus the pressure of our clothes, the furniture of the room, the temperature, etc., even though not attended to, make a difference to our consciousness which we can easily see by an alternation of these processes. We have a very different consciousness in reading a book out of doors under the open sky from what we have in reading the same book in our own study, though in either case we may not be attending to the setting. If we want one name for all these various unnoticed mental processes I would suggest subattentive, not subconscious, which at best is misleading.

But not only are there conscious processes beyond the circle of reflective thought and making a difference to it; there are processes which we can not speak of as conscious at all, which still make a difference to our reflective meaning. That I can take up the problems of yesterday or last year to-day, and thus connect again with my own past, seems to be dependent upon a continuity of processes which are not themselves conscious. The unity of the passing thought can account for the continuity of our consciousness only while we are conscious. It can not bridge over the gap between going to sleep and waking up again, or account for the bringing back of experiences which have not been active in the meantime. What these non-conscious processes are in their own inwardness, we shall never be able to tell. But one thing is certain, and that is the close relation between what we call physical energy and our mental activities. It is a commonplace that a cup of hot coffee may change our emotional attitude toward the world. But I suppose we would not on that account be guilty of speaking of the coffee as emotional stuff. We have gotten over the notion that one process in order to make a difference to another must be of the same kind. Chemical energy is not the same as electrical, though transformable into it. So different are the conceptual tools which we need in each case that electrical energy is sometimes spoken of as immaterial. This, I take it, only signifies that the conception of mass is inapplicable. The difficulty of finding a common denominator between psychic processes and physiological seems still greater, yet they are clearly interdependent. All we can hope to do in science, and science must here be our last word, is to show definitely the conditions under which the transformations take place. The *how* of the process may forever escape us.

As regards, then, the stuff character of reality, we have found it convenient to look at it as of three grades. These grades can be seen in a cross section, as it were, of every reflective moment, the reflective consciousness showing its dependence upon marginal or unnoticed consciousness, and this again upon processes to which no consciousness can be ascribed, and which, for want of a better term, we speak of as physical.

Stuff has the advantage that it can be observed directly. It is an object of immediate perception and judgment. The other attributes of which we shall speak, *viz.*, space, time and direction, can only be observed or make a difference to our judgment through the difference they make to the stuff structure of the world, including our own purposes.

I shall speak of these attributes as non-being attributes, not because they are less real, but because they are not statable as stuff. In the language of modern philosophy the stuff attribute has appropriated the term being. These non-being attributes can be defined or differentiated from each other by the difference which they make to the active purposes of the self.

I have dealt with the attributes of time and space at some length elsewhere, and so shall make only a brief statement in regard to my position here.[2] It has been the custom, since Kant, to deal with these attributes as series and therefore to insist upon their ideal character. I have insisted, on the other hand, that the serial character is relative, and that the real differentia must be found in characters of reality which are not themselves serial, but furnish the rationale of the serial construction. If you speak of time and space, for example, as pure quantity, there remains the problem of stating the relation of time and space to the general concept of quantity, on the one hand, and to show their differentia with reference to each other, on the other hand; that is, the whole problem of definition remains. In what, in other words, lies the difference in our purposive attitude in measuring space and time?

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[2] For the fuller discussion of time and space, see especially the author's monograph 'Time and Reality,' *Psychological Review*, Monograph Series, No. 26; and his articles on 'Space and Reality,' in this JOURNAL, Vol. III., pp. 533 and 589.

To speak first of time. What difference does time make to the realization of our purposes? Time necessitates new judgments, whether because of transformation and novelty in the subject or in the object. If we are compelled to make new judgments, whether the cause of new judgments is in the real object or in the real subject (in either case it must be in the latter), then reality is not expressible in static categories.

It matters not, for this purpose, how you ultimately conceive the stuff of the world. You may conceive the process as the rearrangement of permanent bits. Even then you must have something besides the bits and their position to account for the process of the perceptual world. I do not see, myself, how the bits can be indifferent to the rearrangement they must suffer, except as they are recognized as merely our conceptual models. But whether you conceive the stuff of reality in the last analysis as atoms or monads or simple qualities or as purposive systems of meanings, the question remains: When you have thus conceived reality, why should it slip away? Why does it not remain chained in the present, as Parmenides would say? Why should there be rearrangement, whether a running up or a running down process? As the world has no beginning, neither process can be absolute, for then the world must have run its course countless ages ago. The theory that the world tends to an equilibrium or an equal distribution of heat, as implied in Spencer's formula and the second law of thermodynamics, presupposes a finite creation of the world. If you say, again, that the present rearrangement is the result of previous rearrangements, and so on *ad infinitum,* why should there be rearrangement at all? Why should not our positional values remain fixed? Why should something creep into our equations, whether subjectively or objectively, so as to make them false? If you insist that reality remains fixed, there at least remains the appearance of rearrangement in the subject, and that is part of reality and must be met.

If you say that energy is the cause of rearrangement, then you must at least furnish an intelligible idea of energy. All that we can mean by energy, if we consult scientific advance so far, is such a degree of uniformity as makes prediction possible. But this is the very opposite characteristic from that required for rearrangement. In our own willing, energy would then mean the constancy involved in the realization of our purposes or meanings. That the purpose itself shall have new meaning as the result of the realization can not be stated in terms of energy.

Change, again, is a composite concept and must be analyzed. To say that rearrangement in the object or new judgments from the point of view of the subject are due to change, is at best clumsy tautology and not scientific definition. It simply amounts to saying that change occurs because of change. Neither is the concept of chance serviceable, for chance is merely a subjective attitude, an attitude of at least partial ignorance of the structure of things.

Given, on the other hand, time, as a real character of the world, you can account for the transformation of values or the instability of positions or the falsifying of our judgments, which is what it all amounts to in the end. You can also furnish the rationale for our serial construction to meet such a character of the world. But you can not derive the time character from series. The construction of time infinities is thus a secondary affair, and can neither explain nor invalidate the real time character. We should not say that things move in time. This is putting the cart before the horse. Our serial construction is made necessary, on the other hand, because of the transformation of our facts and values.

And now a word about space. If time makes the difference of transformation, space conditions translation. If time makes an intrinsic difference to our processes, space makes an extrinsic difference. The character of space, in other words, is such that it does not interfere with movement. If space offered resistance, geometry, which is based on free mobility, would be impossible. It matters not for our purposes whether space be actually empty or not. It is convenient, at least for scientific purposes, to posit space as a limit of exhaustion and as the absence of resistance, *i. e.*, to assume a space zero. Only thus can we state Newton's first law of motion. Moreover, if we can approximate to such a limit, it must be as objectively real as though we had actually attained it.

Space makes the difference of distance, as well as that of free mobility. As distance, it conditions the equations of the astronomer and the realization of human ethical purposes. If I wish to communicate with a friend across the sea, it makes a decided difference as regards the kind of communication and the sort of relations that are possible between us, that he is some thousands of miles away.

Things can not move in serial space. Motion in an ideal system is meaningless. Serial space, on the contrary, is an ideal construction to symbolize the relations of things, whether physical masses or geometrical figures or self-conscious individuals, in zero space. If space were merely an ideal system, distance and free mobility would both be figurative without any reality for the figure. If we admit a real zero space, we can easily account for phenomenal or serial space, but not *vice versa*.

I grant cheerfully that all our quantitative measurements are relative. Our serial constructions, our geometrical and chronological models, are our tools by means of which we strive to meet the actual nature of the world. But I do not see how any mere shifting of point of view, as from the human to the absolute, can rid us of characters of reality which condition all our real purposes, whether as regards transformation or translation.

I anticipate the most difficulty from the fourth attribute of which I am going to speak, *viz.*, ought or direction. I admit that this attribute is an afterthought, but the afterthought need not be the less true. We have tried so far to state the universe in terms of three attributes, those of stuff or energy, time and space. But none of these attributes answer the question: Does the process have meaning, or is there validity in the flux? This is not accounted for by stuff, for the stuff character does not contain its own measure. It is precisely because the process is not what it ought to be, because our finite structures are relative, that the question of validity is raised. The question is not answerable in terms of time, for time merely means transformation. Whether transformation towards chaos or towards unity is not answered by time. It is not statable as space, for while space conditions the realization of meaning, it does not constitute meaning or value. But there remains somehow within us the longing for finality; the merely relative fails to satisfy us.

When we insist that there ought to be truth, beauty and goodness, in spite of the relativity of history and our individual judgments, we have at least implied a limit, a direction of history which is not relative. Else all our judgments would be equally meaningless and there could be no degrees of truth, as in the dark all cows are gray.

The absolute idealist insists that in the absolute experience we have such a standard. This absolute experience is even now shared by us. It is this that gives rise to our consciousness of fragmentariness, which accounts for our finite sense of failure, and of which we are even now conscious as the final truth, the purpose eternally fulfilled. But the irony of history gives the lie to any such assumption. The absolute itself is subject to the transmutation of time.

It is the expression of the finite now. Each stage of the process must create its own absolute, find its own satisfaction. The absolute, therefore, is merely an ideal, though convenient, limit. Ontologically, it is relative. It, too, presupposes direction for such validity as it has.

That the idea of direction is valuable as a regulative idea or limit, can not be doubted. But can we also attribute ontological reality to the same? Or is it merely a hypothetical limit, the index of our ideal strivings? It seems to me, if it is required to give meaning to our relative and fragmentary purposes, that it must be at least as real as those purposes themselves. Else all validity becomes impossible. To guarantee the meaning of the process or to furnish the basis for science, the direction must be selective, that is, must condition the survival of structures. Only thus can it satisfy that demand for finality which the finite process fails to fulfill. It is the spirit of truth which is with us always to the end of the eons.

Taking reality, then, at its face value as a stream of processes, it seems to me that it takes at least four dimensions or independent variables to define it: stuff or energy, which furnishes us with our various types of uniformity or expectancy, whether psychological or physical; time, which looked at objectively accounts for rearrangement or passing, looked at subjectively accounts for the instability of our judgments and values; space, which furnishes the possibility of free translation and distance; and direction, which furnishes the limit, epistemological and ontological, for the measure of the validity of our purposes.

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DISCUSSION

CONTROVERSY ABOUT TRUTH

TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS:

The pragmatistic conception of truth is so important that no amount of printer's ink spent upon it ought to be considered wasted. My exposition of it in No. 6 of this year's JOURNAL was sent back to me with copious critical annotations on its margins by Professor John E. Russell. This led to an exchange of letters between us, in which one issue, at least, got sharpened; and as that issue is probably the most prevalent stumbling-block, I ask you, in the interest of clarifying the question, to print the correspondence at it was written. I subjoin our letters.

Sincerely yours,

WILLIAM JAMES.